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ABSTRACT -- KEY POINTS

BRDF

Land Cover/Land Cover Change

During this period, the MODIS code was revised to incorporate HDF-EOS and to implement ECS mandated changes to the metadata. Algorithm testing was performed using our Central America Regional database, and site database development was expanded to North America.

TASK PROGRESS

BRDF/Albedo Product

Algorithm development
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* From February until mid-March the version 2 MOD43B BRDF/albedo code was iterated between SDST and the SCF. Updates required mainly concerned metadata source, content and format. Also the code was transitioned from HDF to HDF-EOS. Data generators and tools were transitioned at the same time. The code was passed several times between SDST and the SCF.

* The code ran for the first time on a full MODIS tile, 1200km by 1200km. This test, using synthetic L1B data passed through all upstream algorithms, passed without any problems. 16 days of data were used.

* The MODLAND-SDST meeting in February focused on V2.1 deliveries and post-launch processing and QA procedures.

* The code is being implemented at University College London for extensive pre-launch testing.

* BU was linked to the VBNS to Washington, which has greatly improved data transfer rates from the TLCF to the SCF.

Scientific advances
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* Started: the previous study of 18 days of AVHRR and GOES-8 1km data over New England will be extended to 6 months. Acquisition of these data and their geolocation is under way and will be automated once understood. This will allow to study seasonal variations. Furthermore, we have acquired Landsat TM imagery of the same region and geocoded it to the BRDF inversions for a detailed study of land surface-BRDF dependencies.

* A plant modeling ray tracing tool that has been completed at University College London (P. Lewis) is being used to study the relationship between biophysical parameters such as LAI and the MODIS BRDF model parameters. Indications are that these models, although semiempirical, produce parameters that are correlated with the physics of the scene.

* ASAS data for the HAPEX-Sahel region were processed to define a prototype BRDF for sparse canopies for use in the at-launch BRDF database required by the algorithm.

* 1km AVHRR data of North and Central America from June 1995 were investigated as to their suitability for BRDF inversions; a project using these data sets may be forthcoming.

Validation activities
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* A mixture model was derived from correlating areal proportions over cover component types from the hemispherical photography taken during the Jornada PROVE field campaign with the corresponding albedometer measurements taken ata the same site. Using newly acquired stationary albedometer data of the same site from the MISR team a solar zenith angle correction was performed as well as a soil moisture correction. The resulting mixture model will be applied to the larger spatial scale using Landsat TM data.

* We investigated whether it would be feasible to put an albedometer onto the light aircraft package to be flown post-launch in MODLAND Quick Look campaigns, coordinated by A. Huete. We will try to achieve this.

* The requirements document for radiometric validation to guide the new EOS validation investigators with respect to MODIS and MISR data products was drafted and submitted to other team members.

Publication/talks activity
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* A paper on expected retrieval accuracies from the MODIS BRDF/albedo algorithm was accepted for publication by the Journal of Geophysical Research.

* A paper on BRDF-corrected NDVI and albedo from AVHRR observations over South America is ready to be submitted

* A paper on the noise sensitivity of MODIS BRDF/albedo retrievals is ready to be submitted

* 5 abstracts were submitted to the IGARSS'98 conference

* 3 other papers on MODIS BRDF/albedo investigations are currently pending reviewer's comments.

LAND COVER/LAND COVER CHANGE

Coding
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* During this reporting period, the MODIS code was revised to incorporate HDF-EOS and to implement ECS mandated changes to the metadata. Algorithm testing was performed using our Central America Regional database, and site database development was expanded to North America. We continued our work with advanced technology (AT) classifiers: neural nets, decision trees and adaptive classifiers.

Test Sites and Test Site Activities
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* We continued the development and testing of a land surface parameter database derived from Landsat TM and ancillary sources, concentrating on North America. Two BU garduate research assistants spent four weeks at USGS EDC accessing the TM archive to develop these training and validation sites.

Algorithm Development and Testing
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* We continued research on neural net classifiers focusing on operational processing scenarios. We continued processing of AVHRR, TM and ancillary data for this regional test site, and development of a land surface parameter database.

DAAC Activities
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* BU continues to test communications links with the EDC-DAAC. Connections with the TLCF and Goddard are fast, but are very slow to EDC.

Land Cover Change
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* Jordan Borak of BU spent four weeks working with Eric Lambin at the University of Louvain on change detection algorithm testing in Africa.

Participation in MODIS Activities
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* IGBP-DIS Landcover Validation Workshop; Group Workshop at UC Santa Barbara (Strahler/Muchoney); 1-3 February 1998; UC Santa Barbara

* MODIS Science Team meeting; 11-13 February 1998; GSFC

ANTICIPATED ACTIVITIES DURING THE NEXT QUARTER

BRDF

* Chaperone the BRDF/albedo codethrough software testing and integration and into the DAAC

* Extensive code testing

* Submit 5 papers to the IGARSS conference, and 2 journal articles on South America AVHRR inversions and BRDF noise sensitivity

* Attend ISLSCP Science Panel Meeting in Paris, travel to China for acquisition of field BRDF data

LAND COVER/CHANGE

* Work will continue to focus on test site/land surface parameter extraction and algorithm testing in North America. Classification algorithm development and testing will focus on the operational aspects (process, flow) of neural net and decision trees classifiers.

* In land cover change activities, we will continue testing of change vector and neural network change detection techniques at specific sites to complement the multitemporal nature of the land cover activities. We will continue site activities using the 1-km NDVI dataset for the western hemisphere and especially Central America.

PROBLEMS/CORRECTIVE ACTIONS

* None